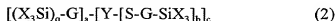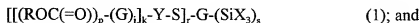**BLOCKED MERCAPTOSILANE COUPLING AGENTS FOR FILLED RUBBERS**

ABSTRACT OF THE DISCLOSURE

5   Disclosed herein is a blocked mercaptosilane selected from the group consisting of:

$$[[(ROC(=O))_p\text{-}(G)_j]_k\text{-}Y\text{-}S]_r\text{-}G\text{-}(SiX_3)_s \qquad (1); \text{ and}$$

$$[(X_3Si)_q\text{-}G]_a\text{-}[Y\text{-}[S\text{-}G\text{-}SiX_3]_h]_c \qquad (2)$$

wherein

Y is a polyvalent species $(Q)_z A(=E)$ selected from the group consisting of $-C(=NR)-$;
$-SC(=NR)-$; $-SC(=O)-$; $-OC(=O)-$; $-S(=O)-$; $-S(=O)_2-$; $-OS(=O)_2-$; $(-NR)S(=O)_2-$; $-SS(=O)-$;
$-OS(=O)-$; $(-NR)S(=O)-$; $-SS(=O)_2-$; $(-S)_2P(=O)-$; $-(-S)P(=O)-$; $-P(=O)(-)_2$; $(-S)_2P(=S)-$;
$-(-S)P(=S)-$; $-P(=S)(-)_2$; $(-NR)_2P(=O)-$; $(-NR)(-S)P(=O)-$; $(-O)(-NR)P(=O)-$; $(-O)(-S)P(=O)-$;
$(-O)_2P(=O)-$; $-(-O)P(=O)-$; $-(-NR)P(=O)-$; $(-NR)_2P(=S)-$; $(-NR)(-S)P(=S)-$; $(-O)(-NR)P(=S)-$;
$(-O)(-S)P(=S)-$; $(-O)_2P(=S)-$; $-(-O)P(=S)-$; and $-(-NR)P(=S)-$; wherein the atom A attached to
unsaturated heteroatom E is attached to the sulfur which in turn is linked via a group G to the
silicon atom;

each R is chosen independently from hydrogen, straight, cyclic, or branched alkyl that
may or may not contain unsaturation, alkenyl groups, aryl groups, and aralkyl groups, with
each R containing from 1 to 18 carbon atoms;

20   each G is independently a monovalent or polyvalent group derived by substitution of
alkyl, alkenyl, aryl, or aralkyl, wherein G can contain from 1 to 18 carbon atoms, with the
proviso that G is not such that the blocked mercaptosilane would contain an α,β-unsaturated
carbonyl that can undergo polymerization reactions, and if G is univalent, G can be a hydrogen
atom;

25

X is independently selected from the group consisting of -Cl, -Br, RO-, RC(=O)O-, $R_2C=NO-$, R_2NO-, R_2N-, -R, and $-(OSiR_2)_t(OSiR_3)$ wherein each R is as above and at least one X is not -R;

p is 0 to 5; r is 1 to 3; z is 0 to 2; q is 0 to 6; a is 0 to 7; b is 1 to 3; j is 0 to 1, but it may be 0 only if p is 1; c is 1 to 6; t is 0 to 5; s is 1 to 3; k is 1 to 2; with the provisos that (I) if A is carbon, sulfur or sulfonyl, then (i) a + b is 2 and (ii) k is 1; (II) if A is phosphorus, then a + b is 3 unless both (i) c is greater than 1 and (ii) b is 1, in which case a is c + 1; and (III) if A is phosphorus, then k is 2.